Jones & Stokes

Technical Memorandum

Date: September 7, 2001

To: Allen Fiksdal, EFSEC Manager

From: Jonathan Ives, Daniel Jones

Subject: Sumas Energy 2, Inc. Application for Site Certification – Technical Memorandum of Adequacy – Evaluation of Stormwater Management and Spill Prevention and Wetland Mitigation for Certification Under Section 401

Introduction

This technical memorandum has been prepared to evaluate the stormwater (construction and operation) and spill prevention elements, and the proposed wetland mitigation plan included in the June 2001 Second Revised Application for Site Certification (ASC) for the Sumas Energy 2 Generation Facility (S2GF) and associated documents.

This memorandum presents Jones & Stokes' professional opinion as to how the S2GF proposal meets applicable federal and state regulations and guidelines for these stormwater and spill prevention elements and wetlands mitigation. Should the Energy Facility Site Evaluation Council (EFSEC or Council) decide to recommend approval of the proposal to the Governor of Washington State, this memorandum suggests language for additional conditions for site certification that would have to be met by the proponent to ensure compliance with applicable regulations and guidelines.

1.0 Water Quality

1.1 Objective

This memorandum evaluates the stormwater (construction and operation) and spill prevention elements of Second Revised ASC (June 2001) for the S2GF (Sumas Energy 2, Inc. et al. 2001). This evaluation is based on review of the Second Revised ASC, review of applicable water

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quality regulations and guidelines, and discussions with EFSEC's Department of Ecology (Ecology) 401 contractor.[1]

This analysis is based on the conceptual level of information provided in the Second Revised ASC. Should the Council decide to recommend approval of this proposal to the Governor of Washington State, EFSEC, with review and approval from other interested agencies such as Ecology, would complete an engineering review of the stormwater and spill prevention plans and design documents submitted by the applicant.

1.2 Authorities

Authority is under 33 U.S.C. 1341, 16 U.S.C. 1456, and RCW 90.48.260, while guidance for this analysis comes from the following:

1. conformance with applicable water-quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. Sections 1311, 1312, 1313, 1316, and 1317 (FWPCA Sections 301, 303, 306 and 307);

2. conformance with the state water quality standards as provided for in Chapter 173-201A WAC authorized by 33 U.S.C. 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law; and

3. conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

1.3 Evaluation of Second Revised Application

1.3.1 Project Description

The proposed S2GF is located in the City of Sumas, Whatcom County, Washington. The 37-acre site includes a 26-acre field used for agricultural production. The gas-turbine generation plant would be constructed on this site. The project would also include gas pipeline and power transmission line components. A 2,500-foot gas pipeline would connect the S2GF with the existing Sumas Cogeneration Company LP generation facility, and a 5-mile-long gas pipeline would extend east and north to the Canadian border. The power transmission line would extend

[1] EFSEC contracted with the Department of Ecology, Northwest Regional Office for review of compliance with 401 certification requirements of the January 2000, Sumas Energy 2 Generation Facility Revised Application for Site Certification.

approximately 3,000 feet northward along the Chicago Milwaukee St. Paul & Pacific Railroad to the Canadian border.

The site would be developed as a 600-megawatt (MW) combined cycle, electric generating facility consisting of two combustion turbine-driven generators and one steam-driven generator. The facility would include stormwater management and spill prevention during construction and operation.

Development of the proposed generation plant would entail placing fill in 9.45 acres of wetlands out of a total of 25.91 acres of farmed wetland, wetland ditch, and palustrine forested/scrub-shrub (PFO/SS) wetlands on the 37.39-acre site (URS Corporation 2001).

The proposed project would also include the construction of a 4.5-mile, 16-inch-diameter natural gas line (4.25 miles within an existing gas line right-of-way [ROW] and the last 0.25 mile of the line within a new ROW), and construction of a new U.S./Canadian 230-kilovolt (kV) electrical transmission line extending north from the site approximately 0.5 mile to the U.S./Canadian border. An additional 5.3 miles of the line would extend north from the U.S./Canadian border to the BC Hydro's Clayburn Station (Jones & Stokes 2001).

1.3.2 Existing Conditions of Project Site

Surface Water Resources

The surface water resources of the proposed generation plant site include the wetlands identified above, and existing drainage ditches that discharge via an existing 42-inch stormdrain to an unnamed tributary of Sumas Creek located east of the site.

The surface water resources along the natural gas pipeline route include 13 wetlands/streams of which 3 (Sumas River, Bone Creek, and Johnson Creek) are streams. The wetlands are farmed wetlands (cornfield and hayed pasture identified as Wetlands B, C, D, E, F, G, H and J), drainage swales (Wetland K), and stream/river crossings (Wetland I, L, and M). Wetland A is located outside of the proposed pipeline corridor (Sumas Energy 2, Inc. et al. 2001).

The surface water resources along the U.S. portion of the 230-kV transmission line alignment include Sumas Creek.

Sumas Creek, Johnson Creek, and the Sumas River are Type 1 streams, while Bone Creek is Type 3, based on Washington State Department of Natural Resources Forest Practices water type rules. Under WAC 173-201A-120 General classifications, Sumas Creek, Johnson Creek, and Bone Creek are classified as Class A (Excellent) because they are unspecified surface waters. Under WAC 173-201A-130 Special classifications-Freshwater, the Sumas River is classified as Class A. A Total Maximum Daily Load (TMDL) study has been completed on the Johnson

Creek watershed (Ecology 2000). Johnson Creek and Sumas Creek are on Washington's 1998 303(d) list because of high fecal coliform levels and low dissolved oxygen. The Sumas River has fecal coliform concentrations exceeding the water quality criterion for Class A waters (Ecology 1992).

1.3.3 Impacts to Water Resources

Development of the proposed generation plant would entail placing fill in 9.45 acres of wetlands out of a total of 25.91 acres of farmed wetland, wetland ditch, and PFO/SS wetlands on the 37.39-acre site (URS Corporation 2001).

Construction of the natural gas pipeline would require crossing 12 wetlands/streams. The drainage swale (Wetland K) and stream/river crossings (Wetlands I [Sumas River], L [Bone Creek], and M [Johnson Creek]) would be horizontally directionally drilled (HDD). Construction in the remaining wetlands (all of which are farmed wetlands) would be by trenching (maximum trench depth of 8 feet with 5-foot minimum cover over the pipe to allow for continued farming). In Wetland J, approximately 1,600 square feet of willow and reed canarygrass would be removed during construction. Construction impacts would occur within wetland buffer for Wetlands G and H. Buffer for both wetlands are farmed (cornfields).

The proposed 230-kV transmission line would span Sumas Creek and avoid wetlands.

1.3.4 Stormwater Management

Stormwater management considerations for the S2GF include site construction and permanent stormwater management. Protection of water quality is regulated by Ecology under Chapter 90.48 RCW and the Federal Clean Water Act (Section 402 9p). EFSEC has received delegation from the U.S. Environmental Protection Agency (EPA) for the issuance of National Pollutant Discharge Elimination System (NPDES) permits for facilities under the Council's jurisdiction. Stormwater management must follow Ecology's Stormwater Management Manual for Western Washington, August 2000 Final Draft (SWMM) or latest edition. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared as a requirement of the NPDES permit for the construction and operation phases of the project, natural gas line, transmission line, and off-site utilities. That NPDES permit would be either under the state waste discharge baseline general permit for stormwater discharges associated with industrial activities, or under an individual permit for steam electric power generating (40 CFR 423).

The Second Revised ASC for the proposed S2GF presented a conceptual grading and drainage plan and description of stormwater management during construction and operation. The applicant proposes to prepare and submit the final design of stormwater management to EFSEC for approval prior to project construction, should the project be approved by the State of Washington.

Construction of the S2GF project would require a detailed SWPPP for the construction and operation phases of the project, natural gas line, transmission line, and off-site utilities. Best management practices (BMPs) must follow requirements set forth in the SWMM.

Detention Facility

The applicant would design the detention facilities to conform to the SWMM and sized using King County runoff time series (KCRTS). The applicant also proposes to construct the permanent detention pond on the project site prior to any other site construction activities. The detention pond would then be used as a construction-phase sediment trap. The pond would be cleaned of sediment for permanent operation as a detention/wet pond upon completion of other site construction (Mitigation Measures Section 1.4.2 EARTH of the Second Revised ASC.

As recommended in the SWMM, the detention facilities should be constructed with an impervious membrane or layer to prevent untreated stormwater from entering the groundwater.

Drainage Ditches

The Second Revised ASC states that stormwater discharged from the detention ponds would enter a ditch along the south boundary of the project site, would then enter the east wetland mitigation area via a channel/swale, and would then be diverted into open water (palustrine aquatic bed) areas in the wetland using a series of weirs. The Conceptual Grading and Drainage Plan (Figure 2.7-1A) of the Second Revised ASC shows a straight channel along the edge of the east wetland mitigation area, and does not show the proposed channel/swale into the wetland. From the plan and associated text, it is unclear if there is a single channel or two channels ultimately connecting to the existing 42-inch culvert that discharges to the receiving water (unnamed tributary to Sumas Creek).

1.3.5 Spill Prevention

The Second Revised ASC discusses spillage prevention and control (Section 2.9) and states that a SWPPP would be prepared for the project. A spill prevention and cleanup plan would be a component of that SWPPP. Section 2.9.2 states that "All liquid storage areas will be above ground in concrete floored areas with concrete curbing or dikes whose enclosed volume exceeds the volumes of tanks within the diked area plus a freeboard as a margin of safety." Ecology regulations state that the spill containment area must be a minimum of 110% of the volume of the tanks within the diked area.

In Section 2.9.2, the applicant indicated that any spillage occurring during construction or operation, along with any contaminated soil, would be removed to an approved disposal area. As

part of the SWPPP, the applicant should identify the approved facilities and locations that would be used in the event of such a spillage.

1.3.6 Monitoring

Section 2.7.1 of the Second Revised ASC indicates that runoff from approximately 40 acres west of the S2GF site would contribute to drainage ditches on the site. Section 1.4.2 indicates the drainage is from 35 acres. This discrepancy in off-site contribution should be corrected.

Because of the influence of off-site runoff contributions to runoff generated from the project site, it is recommended that monitoring of water quality be conducted at the point of discharge from the stormwater detention ponds and prior to using drainage in the east wetland mitigation area. This would ensure that the quality of stormwater discharged to the wetlands is maintained and meets the Class A requirement (Ecology 1997a).

1.4 Conclusion and Conditions for Certification

Based on Jones & Stokes' review of the Second Revised ASC for the proposed S2GF (Sumas Energy 2, Inc. et al. 2001), *and should the council decide to recommend approval of this proposal to the Governor*, the conceptual information provided in the above document is adequate for a positive recommendation by EFSEC, provided the agreement for site certification contain the following additional conditions:

A. No Impairment of Water Quality

A1. Certification of this proposal does not authorize the applicant, SE2, to exceed applicable state water quality standards (Chapter 173-201A WAC) or sediment quality standards (Chapter 173-204 WAC). Water quality criteria contained in WAC 173-201A-030(1) and WAC 173-201A-040 shall apply to this project, unless otherwise authorized by EFSEC. Nothing in this certification shall absolve the applicant, SE2, from liability for contamination and any subsequent cleanup of surface waters or sediments occurring as a result of project construction or operations.

B. Design Review

B1. The applicant shall submit stormwater design plans and drawings at 60% and 95% completion to EFSEC and Ecology for review and approval. These drawings shall address the items defined in Sections 1.3.4, 1.3.5, and 1.3.6 above.

C. Project Monitoring

C1. Monitoring for this project shall be completed as described in the Washington Energy Facility Site Evaluation Council's Site Certification Agreement with the following changes and clarifications:

- The applicant shall establish a water quality monitoring station located at the point of discharge from the facility's stormwater detention facility to the drainage ditches.

D. Construction

D1. The applicant shall comply with either the NPDES General Permit to Discharge Stormwater Associated with Construction Activity or the individual permit for Steam Electric Power Generating (40 CFR 423) to be issued by the Washington State Department of Ecology.

D2. Construction Stormwater and Erosion Control

D2a. Work in or near waters of the state shall be done so as to minimize turbidity, erosion, and other water quality impacts. Construction stormwater, sediment and erosion control best management practices suitable to prevent exceedances of state water quality standards (e.g., hay bales, detention areas, filter fences, etc.) shall be in place before starting any clearing, filling, and grading work at the impact sites.

D2b. Prior to clearing and grading in wetlands, the wetlands adjacent to the project site and natural gas alignment shall be protected from construction impacts. Construction fencing (brightly colored mesh fencing) shall be installed at the edge of clearing within 50 feet of the existing wetlands and stream channels to be protected. This fencing shall be completed prior to clearing. All project staff shall be trained to recognize construction fencing or flagging that identifies wetland boundaries. Equipment shall not be moved into or operated in wetlands or stream channels that are not authorized to be filled.

D3. During clearing and filling at the plant site, gas pipeline alignment, electrical transmission corridor, and utility lines, the applicant shall take all necessary measures to minimize the alteration or disturbance of existing wetland and upland vegetation.

D4. All construction debris shall be properly disposed of on land so that it cannot enter a waterway or cause water quality degradation to state waters.

D5. Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working areas shall be contained for proper disposal, and shall not be discharged into state waters or storm drains.

D6. The applicant, SE2, shall provide notice to EFSEC at least 3 days prior to the start of placing fill in wetlands or other waters of the state.

D7. Clean Fill Criteria. The applicant, SE2, shall ensure that fill placed for the proposed project does not contain toxic materials in toxic amounts.

E. Emergency/Contingency Measures

E1. In the event the applicant is unable to comply with any of the permit terms and conditions due to any cause, the applicant shall:

- Immediately take action to stop, contain, and clean up unauthorized discharges or otherwise stop the violation and correct the problem.
- Notify EFSEC and Ecology of the failure to comply. Spill events shall be reported immediately to EFSEC and Ecology's 24-Hour Spill Response Team at (425) 649-7000.
- Submit a detailed written report to EFSEC within 5 days that describes the nature of the violation, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

Compliance with this condition does not relieve the applicant from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply.

E2. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters. No refueling of equipment shall occur over, or within 50 feet of creeks or wetlands.

F. General Conditions

F1. This certification does not exempt and is provisional upon compliance with other statutes and codes administered by federal, state, and local agencies.

F2. The applicant, SE2, will be out of compliance with this certification if the project is constructed and/or operated in a manner not consistent with the project description contained in the Public Notice for certification, or as otherwise approved by EFSEC.

F3. The applicant, SE2, will be out of compliance with this certification and must reapply with an updated application if 5 years elapse between the date of the issuance of this certification and the beginning of construction and/or discharge for which the federal license or permit is being sought.

F4. The applicant, SE2, will be out of compliance with this certification and must reapply with an updated application if the information contained in the Public Notice is voided by subsequent submittals to the federal agency. Any future action at this project location, emergency or otherwise, that is not defined in the Public Notice, or has not been approved by EFSEC, is not authorized by this Order. All future actions shall be coordinated with EFSEC for approval prior to implementation of such action.

F5. Copies of this Order shall be kept on the job site and readily available for reference by EFSEC personnel, the construction superintendent, construction managers and foremen, and state and local government inspectors.

To avoid violations or noncompliance with this Order, the applicant shall ensure that project managers, construction superintendents, and other responsible parties have read and understand relevant aspects of this Order, the NPDES permit, and any subsequent revision or Ecology-approved plans.

F6. The applicant, SE2, shall provide access to the project site and all mitigation sites upon request by EFSEC personnel for site inspections, monitoring, necessary data collection, or to ensure that conditions of this Order are being met.

F7. Nothing in this Order waives EFSEC's authority to issue additional orders if EFSEC determines further actions are necessary to implement the water quality laws of the state. Further, EFSEC retains continuing jurisdiction to make modifications hereto through supplemental order, if additional impacts due to project construction or operation are identified (e.g., violations of water quality standards, downstream erosion, etc.) or if additional conditions are necessary to further protect the public interest.

F8. Liability. Any person who fails to comply with any provision of this Order shall be liable for a penalty of up to ten thousand dollars ($10,000) per violation for each day of continuing noncompliance.

2.0 Wetlands

2.1 Objective

This technical memorandum has been prepared to provide an evaluation of the proposed wetland mitigation plan included in the June 2001 Second Revised ASC for the S2GF. The documents reviewed included the Second Revised ASC and the June 2000 Wetland Delineation and Mitigation Report prepared by Bexar Environmental Consulting, Ltd. (Bexar) and attached to the application as Appendix C.

The mitigation plan has been reviewed following standard procedures used by the Ecology. Each element of the plan has been assessed using publications (listed below) prepared by Ecology for the regulation and rating of wetlands and the design of mitigation plans. The objective of this technical memorandum is to determine whether individual elements of the mitigation plan adequately conform to Washington State standards for water quality certification under Section 401 of the Clean Water Act.

This part of the memorandum is divided into two sections: an evaluation of the proposed wetland mitigation plan, and a set of additional conditions under which the plan would be adequate for certification under Section 401 of the Clean Water Act.

2.2 Evaluation of Wetland Mitigation Plan

2.2.1 Project Description

The S2GF would be located in the City of Sumas, in Whatcom County, Washington. The proposed 37-acre site includes a 26-acre field used for agricultural production. The gas-turbine generation plant would be constructed on this site. The project would also include gas pipeline and power transmission line components. A 2,500-foot gas pipeline would connect the S2GF with the existing Sumas Cogeneration Company LP generation facility, and a 5-mile-long gas pipeline would extend east and north to the Canadian border. The power transmission line would extend approximately 3,000 feet northward along the Chicago Milwaukee St. Paul & Pacific Railroad to the Canadian border.

The project description in the June 2000 Bexar wetland mitigation plan does not present the entire project as described in the Second Revised ASC. It excludes the utility corridor wetlands and wetland impacts. The full project, including all wetland descriptions and impact assessments, was included in the earlier (June 1999) version of the Bexar report. It is understood from the Project Understanding of the June 2000 report that the later report was intended to address revisions to the mitigation plan that arose from discussions between the applicant,

Ecology, and the Washington Department of Fish and Wildlife (WDFW). However, the June 2000 Bexar report is attached as an appendix to the Second Revised ASC, and serves as the mitigation plan referenced in the application. Therefore, it should therefore provide a full and complete description of all components of the project. This includes wetland impacts of the gas line and power transmission line activities, and mitigation measures for those impacts as stated in the Final Environmental Impact Statement (FEIS) and stipulated agreements with WDFW and Ecology.

Currently, the proposed wetland mitigation plan has been presented as compensation for 9.45 acres of wetland impacts at the plant site only. Additional impacts associated with the construction of the gas pipelines total 26,160 square feet (0.60 acre). Construction of the power transmission line appears to require no direct wetland impact, but may involve trimming and/or topping of trees within wetlands. The mitigation plan should discuss these actions and their impacts in detail, and be consistent with language in the body of the Second Revised ASC and in the FEIS. Mitigation measures included in those documents should be part of the wetland mitigation plan.

2.2.2 Site Assessment for Existing Conditions of Project/Impact Site

The site assessment provided in the wetland mitigation plan includes the following components:

- wetland delineation;
- functions provided by existing wetland(s);
- ratings of wetland(s);
- buffers – size and condition; and
- impact summary of acreage and functions.

Wetland Delineation

The wetland delineation was conducted using the 1987 Wetland Delineation Manual prepared by the U.S. Army Corps of Engineers (Corps), and the U.S. Department of Agriculture Natural Resources Conservation Service National Food Security Act Manual, Part 514. The wetland delineators also referred to the 1997 Washington State Department of Ecology Wetlands Identification and Delineation Manual (Ecology 1997b).

Delineation of wetlands on the site originally excluded those areas that qualified as prior converted cropland (PCC) under NRCS and Corps criteria. After consultation with Ecology, the delineation was expanded to include the PCC areas.

The site was visited on September 2, 2001 to verify the delineation. Most wetland boundaries were found to be accurately delineated. The northern boundary of the central emergent wetland in the east mitigation area is more properly located approximately 20 feet further north; however,

this discrepancy is not considered large enough to warrant a new delineation. The discrepancy would be addressed in the conditions for the design of buffers.

Wetland Functions

Wetland functions are described in the application (2000 Bexar report) using Ecology's draft Characterization Inventory Methodology and a method based on the Snohomish County functional assessment, which is in turn based on the Adamus Wetland Evaluation Technique. Ecology had previously stated that the wetland functions should be assessed using the Washington State Methods for Assessing Wetland Functions. However, the results obtained by Bexar using the other methodologies appear to adequately assess wetland functions on the site.

Wetland Ratings

The wetlands were rated using City of Sumas and State of Washington (Ecology) methods. In evaluating the wetlands on the site, Bexar separated the 8.8-acre PFO/SS wetland from the remainder of the site. The 1993 Ecology Wetlands Rating System allows segmentation of a mature wooded forest from other wetlands only if the forested wetland is a Category I wetland.

Mature forested wetlands are defined by Ecology as having 50% of the upper forest canopy in evergreen trees over 80 years old or deciduous trees older than 50 years, or with 50% of the canopy in evergreen trees older than 50 years and structural diversity characterized by additional trees of heights from 20-49 feet, shrubs 6-20 feet, and an herbaceous ground cover. A September 2, 2001 field visit found that approximately half of the area meets these criteria; however, most of the area does not. Moreover, information on page 6 of the Bexar report indicates that portions of the forested/scrub-shrub wetland on the site have been "subjected to a series of logging, clearing and regeneration" activities. Therefore, the 8.8-acre PFO/SS wetland on the site does not meet the definition of a mature forested wetland, does not meet the criteria for a Category I wetland, and cannot be segmented from the adjacent wetlands. As a result, the wetlands on the site are rated together and score over 22 points on the Ecology Rating System. According to this rating system, they are Category II and not Category III wetlands.

Wetland Buffer Size and Condition

Wetland buffers for the plant site are adequately described in the application. Buffers around the proposed plant site and mitigation areas are either agricultural fields, light industrial areas, roads, or railroad. The discussion of buffer sizes and conditions should be expanded to include buffers for the gas line and transmission line components of the project.

Wetland Impact Summary

The summary of wetland impact acreages and loss of wetland functions appears to be accurate and appropriate as a basis for designing the wetland mitigation plan.

2.3 Mitigation Approach

Based on Ecology's standard review of mitigation plans, a wetland mitigation plan is deemed acceptable if it contains a sufficiently detailed discussion of the mitigation approach, including the following items:

- mitigation sequencing;
- goals or primary objectives that will require performance standards;
- a mitigation technique/approach describing wetland communities (e.g., emergent, scrub-shrub, forested, open water) to be created and anticipated hydrology (seasonal ponding or saturation, permanent ponding or saturation, intermittent ponding or saturation); and
- project construction monitoring and mitigation/BMPs.

All of these items are covered in sufficient detail in the 2000 Bexar report, with the exception of the discussion of goals and objectives that require performance standards.

The wetland mitigation report includes sections on objectives and performance standards. These need to be expanded and clarified to provide specific objectives that are linked to performance standards that measure whether the objective has been met. As an example (Ecology 1994), a wetland mitigation project may be designed to create an open water area with diverse vegetation structure around the edge. Objectives need to be clearly written stating the size and depth of the open water area, and the area and type of vegetation communities to surround the edge. Performance standards would then be written specifically linked to each objective, in a way that the achievement of the objective can be measured. The example objectives and performance standards are:

Objective a: create an open water area approximately 1 acre, with maximum seasonal depth ranging between 12-36 inches

- Performance standard: Area of open water after 5 years will be 1 acre during the wet season, 0.25 acre during the dry season, with a minimum depth during the dry season of 12 inches, and a maximum depth of 36 inches during wet season.

Objective b: The vegetated portions around the open water will have 3 acres each of emergent, scrub-shrub, and forested vegetation classes.

- Performance standard 1: The emergent vegetation will cover at least 3 acres of the wetland after 5 years, and the cover of native emergent species will be at least 80% in these 3 acres as measured by belt transects. The standard deviation of the mean cover value in the sampling quadrats will be less than 25% of the mean value.

- Performance standard 2: The scrub-shrub vegetation will cover at least 3 acres of the wetland after 5 years, with an 80% cover of native scrub-shrub species in this area as measured by belt transects. The standard deviation of the mean cover value will be less than 25% of the mean value.

- Performance standard 3: The forest vegetation will cover at least 3 acres of the wetland after 20 years, with a canopy cover of at least 40% of native species in this area.

Additional examples can be found in the 1994 Ecology publication, Guidelines for Developing Freshwater Wetlands Mitigation Plans and Proposals.

2.4 Mitigation Site Selection

The selection of the wetland mitigation site appears to be appropriate in terms of topography, soils, and hydrology. While it does not provide sufficient area to fully mitigate the project's impacts (as discussed below under the Preliminary Mitigation Site Plan – *Mitigation Acreage* section), it is a suitable site for a portion of the mitigation. We acknowledge the two proposed mitigation sites are separated by the proposed plant site. However, we believe that wetlands can be enhanced and created in these two sites to provide wetland functions currently not present on the existing agricultural setting of the wetlands.

Ecology normally requires compensatory mitigation for impacts to Category II wetlands at a 2:1 ratio if the mitigation involves restoration of existing degraded wetlands or creation of new wetlands, and a 4:1 ratio for enhancement of existing wetlands. In its September 27, 2000 letter to Allen Fiksdal/EFSEC, EFSEC's Ecology 401 contractor indicated that minimum replacement ratios of 1.25:1 for creation/restoration and 2.5:1 for enhancement would be acceptable.

The use of minimum replacement ratios of 1.25:1 for creation/restoration and 2.5:1 for enhancement is appropriate, with one exception. A 4.8-acre portion of the existing PFO/SS wetland west of the plant site may be enhanced at a 6:1 replacement ratio. The remaining 4.0 acres are not eligible for mitigation.

The rationale for using these ratios considers the following criteria:

- ecological characteristics of the existing wetlands; and
- typical ratios recommended by Ecology.

The existing wetlands are primarily low-quality palustrine emergent areas that have been subjected to continual disturbance due to farming. Most of the functions normally provided by emergent wetlands have been compromised by this land use. Moreover, the Category II wetland rating results less from the ecological quality of the wetlands and more from the area that they cover. Also, the entire PFO/SS area west of the plant is not of high enough quality to be rated Category I, and therefore cannot be separated from the remainder of the wetland. The inclusion of the forested component, along with the area of the emergent wetlands resulted in the Category II rating.

Recognizing that the Ecology guidelines provide a means of evaluating a resource, and are not strict regulations, it is appropriate to exercise professional judgment and allow the lower replacement ratios.

By the same rationale, it is appropriate that enhancement of the 8.8-acre PFO/SS area be limited to the lower-quality portions of the wetland. Approximately half of this wetland is a higher quality forested wetland with a multi-layered canopy and well-developed shrub layer over an herbaceous ground cover. It likely retains much of the function of a mature forested wetland. Also, the entire 8.8-acre PFO/SS wetland had been avoided during the mitigation sequencing process and would normally be ineligible for further mitigation. This is consistent with Ecology's firm policy of minimizing the use of quality wetlands as mitigation areas.

Nevertheless, the July 17, 2000 supplemental agreement between SE2 and WDFW called for planting of western red cedar trees on 15-foot centers in the PFO/SS wetland, recognizing that there may be some ecological value to enhancing this area. Approximately 4.8 acres of the area could potentially benefit from enhancement. In our professional judgment, the remaining 4.0 acres are of sufficiently high quality that enhancement efforts would not generate additional ecological benefits, and may well degrade the existing wetland.

In the professional judgment of this technical memorandum, the applicant could be allowed to use 4.8 acres in the north and central portion of the 8.8-acre PFO/SS wetland for enhancement. However, in deference to Ecology's stated opinion and policy, and following Ecology's standard guidance for enhancement in forested wetlands (Ecology 1998), the enhancement effort should be credited at a 6:1 ratio.

Using these ratios, the project's 9.45-acre wetland impact would require 11.8 acres of restoration/creation or 23.63 acres of enhancement, or a combination of mitigation strategies,

with individual areas credited at the appropriate ratio. Enhancement of 4.8 acres of the 8.8-acre PFO/SS wetland would yield 0.8 acre (4.8 acres/6) of mitigation credit.

2.5 Preliminary Mitigation Site Plan

The preliminary mitigation site plan provided by the applicant includes a plan view of the proposed mitigation and plant species lists for the mitigated areas. The general concept of creating additional wetland or enhancing existing wetlands is appropriate, as is the plan to augment species and community diversity with a variety of wetland classes. However, the proposed plan has two key faults in its design. These are related to

- inadequate mitigation acreage, and
- insufficient buffers.

2.5.1 Mitigation Acreage

Jones & Stokes is basing the analysis of mitigation acreage on Ecology's prescribed ratios of wetland impacts to mitigation acres, dependent on the type of mitigation offered. For example, suppose a project generates 5 acres of impacts to a Type IV wetland. Mitigation can be provided as creation or restoration, at a ratio of 1.25 acres of created or restored wetland per 1 acre with impacts (1.25:1). It may also be provided as enhancement of existing wetlands at a ratio of 2.5:1. The impact area is multiplied by the ratio to obtain the required area. Using these ratios, the 5 acres of wetland impact require 6.25 acres of created or restored wetlands, or 12.5 acres of enhanced existing wetlands. Combinations of areas can also be used. When evaluating the mitigation *credit* of an area, the mitigated acreage is divided by the appropriate ratio. Thus, if the example project has 10 acres of existing wetland to enhance, then that area provides 4 acres (10/2.5) of enhancement credit, and the project needs to find an additional acre of mitigation credit.

The wetland mitigation plan for this project proposes approximately 21.56 acres of wetland mitigation. Of this, 17.83 acres of existing wetlands would be enhanced, and 3.73 acres of new wetlands would be created in existing upland areas. Using the 2.5:1 replacement ratio for enhancement and the 1.25:1 ratio for creation, these areas would normally provide 10.1 acres of compensatory mitigation.

However, the proposed enhancement acreage includes the entire 8.8-acre PFO/SS area and assumes that it would be credited at a 2.5:1 ratio. As stated above, only a 4.8-acre portion of the 8.8-acre PFO/SS wetland may be used for enhancement. The allowable ratio for this enhancement would be 6:1. If the entire 4.8-acre portion of the PFO/SS wetland were enhanced, it would yield 0.8 acre (4.8 acres/6) of mitigation credit.

Enhancement of existing palustrine emergent wetlands totals 9.03 acres. Applying the 2.5:1 ratio for enhancement, this area provides 3.61 acres of mitigation credit. The enhancement of the 4.8 acres of PFO/SS wetland at a 6:1 ratio provides 0.8 acre of mitigation credit. Creation of 3.73 acres of new wetlands at a 1.25:1 ratio provides 2.98 acres of mitigation credit. The total mitigation credit provided by the current wetland mitigation plan would be 7.39 acres. With 9.45 acres of wetland impacts requiring compensation, this leaves a mitigation deficit of 2.06 acres. The mitigation acreages are summarized in Table 1.

Table 1. Summary of Mitigation Acreages, Allowed Ratios and Mitigation Credit

Type of Mitigation	Acreage Proposed	Allowed Ratio	Mitigation Credit (Acres)
Enhancement of palustrine emergent wetlands	9.03	2.5:1	3.61
Enhancement of palustrine forested/scrub-shrub wetland	4.8*	6:1	0.8
Creation of new wetlands from upland	3.73	1.25:1	2.98
TOTAL	**17.56**	-	**7.39**

* The wetland mitigation plan proposes to enhance 8.8 acres of palustrine forested wetland; however, 4.0 acres of this wetland are higher-quality forested wetland and are not eligible for mitigation.

The 2.06-acre deficiency can be made up with additional mitigation area. The applicant can provide an additional 5.15 acres (2.06 x 2.5) of enhancement of existing wetlands, or an additional 2.6 acres (2.06 x 1.25) of additional created or restored wetlands. Combinations that yield 2.06 acres of mitigation credit can also be used. Plant species that are proposed for the current plan are appropriate and can be used in the additional mitigation areas.

2.5.2 Wetland Buffers

The created and enhanced wetland mitigation areas should have adequate buffers included in the design of the site. The current mitigation design places upland buffers in existing wetlands, and provides inadequate buffers for wetlands created in existing upland. Where feasible, both existing and mitigated wetland areas on the plant site and the west and east mitigation areas should have a minimum 50-foot buffer.

In portions of the existing wetlands, a 50-foot buffer is not feasible. In the west mitigation area, the emergent wetlands appear to continue off-site to the west. There is no need to fill wetlands to create upland buffers along the western boundary of the site. Also, the existing wetlands along the southern edge of the west mitigation area appear to extend to the road, leaving no room for a buffer. Similarly, in the east mitigation area, existing wetlands adjacent to the roads or within 50 feet of the edges of the mitigation area should not be converted to upland buffers.

All existing wetlands within 50 feet of the edges of the mitigation areas (i.e., those areas where upland buffers are not feasible) should be enhanced as palustrine forested communities. This would provide at least a portion of buffer function for the interior of the mitigation areas.

Specific recommendations for redesigning the buffers include the following:

- Retain the upland forested area in the southwest and southeast corners of the west mitigation area. Convert existing emergent wetlands along the wetland portions of the western and southern boundaries to palustrine forested wetland.

- Create a 50-foot upland buffer along the southern edge of the east mitigation area. Extend the buffer up along the western and eastern edges, but not into existing emergent wetland. Convert areas of emergent wetland along the eastern edge and within 50 feet of the western edge into palustrine forested wetland. Enhance the existing emergent wetlands along the northern edge into palustrine forested wetland. Continue the planting of wetland tree and shrub species from the delineated wetland edge to the existing tree line.

- Plant tree and shrub species in the median areas south of Haul Road and north of State Route 9. This will provide additional buffer function, particularly where the existing wetlands are adjacent to Haul Road. Portions of these medians have hydric soils and may have wetland hydrology as well, so the species chosen should be wet-mesic-tolerant.

Buffers for additional mitigation off site should be 100 feet. This is consistent with guidance from Ecology (Ecology 1998) regarding minimum buffers for Category II wetlands. The reduction to 50-foot buffers at the plant site is an exception to this guidance and is based on the restrictions to adequate buffering imposed by the current adjacent land uses.

2.6 Monitoring

The monitoring plan outlined in the Bexar report is generally adequate, with the following exceptions:

- Objectives, performance standards, and monitoring procedures for measuring performance should be clearly linked.

- Percent cover of trees and shrubs should be increased to ensure forested and scrub-shrub wetland is established.

- Additional invasive species should be controlled.

- Contingency measures for potential mitigation failures or problems should be identified.

2.6.1 Linked Objectives, Performance Standards and Monitoring Procedures

The wetland mitigation plan should clearly state what monitoring methods are to be used that will objectively measure performance standards. There should be a clear linkage between a mitigation objective and an associated performance standard, and between a performance standard and the monitoring methods. The mitigation plan should include discussions of how acreages would be determined, how areal cover would be assessed, how vegetation, soils, and hydrology would be measured, etc. (Please see the discussion of mitigation objectives and performance standards above in the Mitigation Approach section for additional information.)

2.6.2 Percent Cover of Trees and Shrubs

The mitigation plan states that performance standards for trees and shrubs are to have a maximum percent cover value of 15% (10th year). This value is too low for the proposed wetland classes that are shown in the plan. The majority of the mitigation area is shown as palustrine forested wetland. By Ecology's definition, a forested wetland class has trees with at least 30% areal cover. Similarly, scrub-shrub wetlands have at least 30% shrub coverage. The performance standards currently listed would result in palustrine emergent wetlands with occasional trees and/or shrubs. These standards should be broken down by wetland class, and amended to require at least 30% areal cover for trees and shrubs in their respective classes by year 5, and at least 50% areal cover for trees and shrubs in their respective classes by year 10.

2.6.3 Additional Invasive Species

The current monitoring plan discusses control of reed canarygrass *(Phalaris arundinacea)* and barnyard grass *(Echinocloa crusgalli)*. This list should be expanded to include Himalayan blackberry *(Rubus armeniacus)* and other noxious weeds that may invade the mitigation area. The applicant should consult the Whatcom County Noxious Weed Control Board for appropriate species to monitor and control.

2.6.4 Contingencies

The wetland mitigation plan's discussion of contingencies should be expanded to specify who the responsible parties would be for conducting monitoring, evaluating whether performance standards are met, designing remedial actions as needed, and carrying out those actions when necessary.

2.7 Other Features

2.7.1 Site Ownership

The wetland mitigation plan includes a discussion of the future ownership and preservation of the mitigation areas. The area is to be placed in a permanent conservation easement and recorded with Whatcom County.

2.8 Conclusion and Conditions for Certification

It is the conclusion of this memorandum, after a thorough review of the SE2 wetland mitigation information contained in the Second Revised ASC and the June 2000 Mitigation Plan, *and should the Council decide to recommend approval of this proposal to the Governor*, that the wetland mitigation plan appears to be adequate for a positive approval by EFSEC, provided the agreement for site certification contain the following additional conditions:

A. **Wetland Mitigation Plan Scope** – The mitigation plan will include discussions of existing wetland resources, impacts to those resources, and mitigation of those impacts for all components of the project. Discussion of wetland impacts and mitigation measures for the natural gas line and the power transmission line components found in the 2001 FEIS, the 1999 Wetland Mitigation Plan, and the Second Revised ASC should be incorporated into the wetland mitigation plan.

B. **Compensatory Mitigation Acreage** – The applicant will amend the mitigation plan to provide additional creation, restoration, and/or enhancement acreage. The amended plan should provide a total of 9.45 acres of mitigation credit. Mitigation credit will be calculated based on a 1.25:1 replacement ratio for creation or restoration, and a 2.5:1 replacement ratio for enhancement. If the 4.8-acre north-central portion of the 8.8-acre PFO/SS area is enhanced, it will be credited at a 6:1 ratio, and will provide 0.8 acre of mitigation credit. Development of an amended mitigation plan that will provide the remaining 8.65 acres of mitigation credit will require off-site mitigation in addition to the creation and enhancement areas already proposed. Additional off-site mitigation should be located within the Johnson Creek watershed.

C. **Wetland Buffers** – The amended mitigation plan should include minimum 50-foot buffers around all existing wetlands and the plant site mitigation areas. Minimum buffer widths around wetlands created or enhanced at additional off-site areas will be 100 feet. Please note that providing for a 50-foot buffer area may reduce the area of wetland creation in the existing plan. Minimum 50-foot buffers do not need to be provided in the following situations:

a. Upland buffers will not be created in wetlands along project site boundaries, if the wetland extends beyond the boundaries.

b. Upland buffers will not be created where existing wetlands are immediately adjacent to roads.

D. **Mitigation Objectives and Performance Standards** – The amended mitigation plan will include mitigation objectives that are linked to specific performance standards for monitoring. Each performance standard will be linked to specific monitoring methods described in the amended plan. Contingencies for failure to meet performance standards should be clearly listed, including specific remedial actions and the parties responsible for carrying them out.

E. **Wetland Ratings** – The existing wetlands on the site will be rated Category II.

F. **Mitigation Monitoring** - Mitigation monitoring for this project shall be completed as described in the EFSEC Site Certification Agreement. Monitoring will be conducted for all components of the project, and shall include:

a. "As-Built" Report: An "as-built" report including up-to-date as-built drawings documenting the final design of the project area shall be prepared when site construction and planting are completed. A copy of the "as-built" report shall be sent to EFSEC within 60 days of completing construction and initial planting, and in no case later than 13 months from the date of permit issuance. Up-to-date as-built progress reports will be due periodically until completion of the mitigation. The "as-built" report shall include the following:

i. drawings that clearly identify the boundaries of the mitigation areas and buffers;

ii. drawings that clearly identify the stormwater drainage and detention facility and discharge channels, including associated stormwater channels within the east wetland mitigation area;

iii. photographs of the area taken from permanent reference points;

iv. locations of sampling and monitoring sites; and

v. an analysis of any changes to the mitigation plan that occurred during construction.

b. Deed Restriction: The permanent conservation easement recorded with Whatcom County should clearly indicate that the wetland mitigation areas and all remaining

wetlands on the site are "waters of the state." Documentation that this requirement has been fulfilled shall be provided to EFSEC as part of the initial "as-built" report.

c. Monitoring Plan: Monitoring shall proceed as described under the June 2000 wetland mitigation report with the following changes and clarifications:

    i. SE2 shall grant access to the mitigation areas for inspection by EFSEC personnel or their designated representatives.

    ii. A written report describing the monitoring results will be submitted to EFSEC over a 10-year period with reports submitted in years 1, 2, 3, 4, 5, 7, and 10.

d. Performance Standards: Mitigation efforts shall be monitored for compliance with the performance standards to be developed in Item D, Mitigation Objectives and Performance Standards described above.

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